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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,747	02/24/2004	Larry W. Fullerton	28549-200824	2442
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VENABLE LLP P.O. BOX 34385 WASHINGTON, DC 20043-9998			EXAMINER TSE, YOUNG TOI	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/784,747	<b>Applicant(s)</b> FULLERTON ET AL.	
	<b>Examiner</b> Young T. Tse	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 12 August 2009 and 29 April 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 25,27-34 and 36-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 23-25,27-34 and 36-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 March 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments, see pages 6-9, filed April 29, 2009, with respect to 35 U.S.C. 112, first paragraph have been fully considered and are persuasive. The rejection of claims 28-29 and 37-38 has been withdrawn.
2. Applicant's arguments filed April 29, 2009 have been fully considered but they are not persuasive.

Applicant argues that claim 23 requires a filter that spectrally modifies an ultra wideband signal to create one or more zero crossings in the time domain.

Buchan discloses a write equalization circuit for a computer tape drive. There is no indication, teaching or suggestion anywhere in this reference for using the disclosed tape drive write equalization circuit in any transmitter whatsoever, let alone a UWB transmitter. There is also no implicit or explicit evidence on record as to why one of ordinary skill in the art of radio frequency transmitters would look into the tape drive technology for a filter that spectrally modifies RF signal to create one or more zero crossings in the time domain. Moreover, the Action incorrectly states that the filter 225 of Buchan generates the wave form shown in Figure 6. Just a cursory review of the wave form labeling in Figure 6 reveals that the shown waveforms could not have been generated by the filter 225. This is because the shown zero crossing waveforms are labeled as input waveforms to the filter 225 of Figure 5.

Further, the Office Action states that Buchan teaches a well-known time-domain filter that detects the timing of input crosses zero..." The Action, however, has not explained how such zero crossing detection relates to spectrally modifying RF signals to create one or more zero crossings in the time domain, as required by the claimed invention. Figure 6 of Buchan shows inputs to the time domain filter of Figure 5. See, Buchan, Column 3, lines 15-18.. It is well known that a filter can not generated zero crossings at its input. There is no disclosure in Buchanan regarding filter 225 creating any type of zero crossings. Detecting zero crossings is not creating zero crossing. Zero crossings must be created before they can be detected. Consequently, by teaching a time domain filter that detects the timing of the zero crossings of an input signal, Buchan fails to teach or fairly suggest a filter that spectrally modifies a ultra wideband signal to create one or more zero-crossings in the time domain, as required in claims 23.

Finally, the Action argues it would have been obvious to recognize that a time domain filter, such Buchan's filter, is capable of modifying UWB signals at the input of filter 82 of Fullerton to create one or more zero crossings. As stated above, there is no evidence in the record that one of ordinary skill in the art in the RF/UWB transmitters would seek a solution in the non-analogous tape drive art. Even assuming arguendo that RF/UWB transmitters and tape drive art are analogous, Buchan's filter still does not spectrally modify an UWB signal to create zero crossings. This filter merely detects zero crossings. Therefore, replacing the filter 82 of Fullerton with filter 225 of Buchan would results in a transmitter that outputs a signal that corresponds to the detected zero crossings of Fullerton's modulated UWB signal. Such signal would be useless for its

intended purpose, i.e., communicating the modulated information, since the signal does not correspond to any such information. Therefore, Buchan does not teach or suggest a filter that spectrally modifies a ultra wideband signal to create one or more zero crossings, as required in claim 23. Based on the foregoing reasoning, neither Fullerton "317 nor Buchan, alone or in combination, teach or suggest claim 23. Withdrawal of the rejection is respectfully requested.

Claims 31 and 40 recites similar subject matter and are allowable, at least for similar reasons. Withdrawal of the rejections is respectfully requested.

Claims 24 and 27-30, 32-33 and 36-39, and 42 depend on claims 23, 31, and 40, respectively, and are allowable, at least, for depending from an allowable claim. Applicants respectfully request the rejections be withdrawn.

Claims 25, 34, and 41 stand rejected under 35 U.S.C. § 103(a) as being obvious over Fullerton "317 in view of Buchan and further in view of U.S. Patent No. 4,583,232 to Howell. This rejection is respectfully traversed because Claim 25, 34, and 41 depend on claims 23, 31, and 40 respectively, and are allowable, at least, for depending on an allowable claim. Withdrawal of this rejection is respectfully requested.

The examiner respectfully disagrees with Applicants analysis. The teaching by Buchan of the time domain filter 82 of Fullerton' 317 does not have to include all the limitations of the filter recited in claim 23 because the time domain filter 82 is already implemented in an ultra wideband (UWB) transmitter of Figure 1 and is capable of spectrally modifying the UWB signal in the time domain.

Although Fullerton'317 does not explicitly show or teach that the time domain filter 82 to filter the UWB signal to create one or more zero crossings in the time domain, one of ordinary skilled person in the art would know that a filter, such as Fullerton's time domain filter 82 that is capable of spectrally modifying the UWB signal in the time domain is also capable of spectrally modifying the UWB signal over one or more zero crossing on the time domain. For example, Buchan discloses a reading circuit comprises a time domain filter 225 within the transmitter circuit of Figure 1 because a data encoder 11 is shown in Figure 1 and is implemented in a transmitter circuit.

Buchan teaches that "[A]s is known, the time domain filter essentially detects when the timing input crosses zero, delays a predetermined amount, and then examines the amplitude qualification signal as to whether or not it has exceeded one of two threshold levels that are on either side of a reference by equal amounts. Such threshold levels can be considered as a positive threshold and a negative threshold, and an RDP pulse is produced only under conditions (a) and (b)." See col. 10, lines 15-38.

Buchan also shows waveforms that represent the timing channel and amplitude qualification inputs to the time domain filter 225, and the generation of the RDP pulses pursuant to the amplitude and polarity of the amplitude qualification signal after a predetermined time interval  $t_f$  following a zero crossing by the timing signal. It is noted that a zero crossing of the timing signal that occurs prior to when the predetermined time elapses for a predetermined zero crossing is ignored. See col. 10, line 39-47.

Therefore, independent claim 23, including dependent claims 24-25 and 27-30 are unpatentable over Fullerton'317 in view of Buchan (and Howell as applied to claim 25).

The claimed subject matters of independent claims 31 and 40 are similar to the claimed subject matter of independent claim 23, therefore, claims 31 and 40, including dependent claims 32-34, 36-39 and 41-42 are also unpatentable over Fullerton'317 in view of Buchan (and Howell as applied to claims 34 and 41) for the same reasons described in claim 23.

### ***Drawings***

3. The drawings were received on March 10, 2008. These drawings are acceptable.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 23-24, 27-33, 36-40 and 42 are rejected under 35 U.S.C. 103(a) as being obvious over Fullerton (U.S. Patent No. 4,641,317) in view of Buchan et al. (U.S. Patent No. 5,267,096, hereinafter "Buchan").

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).



Regarding claims 23, 31 and 40, Fullerton discloses a spread spectrum wide band transmitter in Figure 1 comprising an output stage that generates an ultra wideband signal, for example, by the antenna 90 (col. 4, lines 33-38); a time domain filter 82 that spectrally modifies the ultra wideband signal in time domain; and the antenna 90 coupled to the filter that radiates the spectrally modified ultra wideband signal. Although Fullerton shows the wide spread signal in the time domain in waveform H of Figure 4 is being the composite of the shaping effects of the filter 82, but fails to teach or suggest that the filter 82 spectrally modifies the wide spread to create one or more zero crossings in the time domain even the waveform H indicates zero crossings in the time domain.

Buchan shows a time domain filter 225 in Figure 5 and a waveform shown in Figure 6 that generated by the time domain filter 225. Buchan also teaches that a well known time domain filter essentially detects when the timing of input crosses zero, delays a predetermined amount, and then examines the amplitude qualification signal as to whether or not it has exceeded one of two threshold levels that are on either side of a reference by equal amounts (col. 10, lines 15-20). Buchan also teaches that Figure 6 sets forth waveforms that represent the timing channel and amplitude qualification inputs to the time domain filter, ... following a zero crossing by the timing signal (col. 10, lines 39-47).

Therefore, it would have been obvious to one of ordinary skilled in the art to recognize that a time domain filter is capable of modifying ultra wide band signal to create one or more zero crossings in the time domain as either well known to a skilled

person the art or taught by Buchan in order to modify a filter input signal, such as the wide spread signal used in Fullerton's transmitter to create one or more zero crossings in the time domain of the time domain filter 82.

Regarding claims 24 and 32, wherein the wide spread signal or the ultra wideband signal comprises at least one of a pulse generated from the pulse position modulator 22 or a monocycle generated by the mono 46.

Regarding claims 27, 36 and 42, wherein the wide spread signal or the ultra wideband signal is based upon a trigger signal generated by the triggering amplifier 52.

Regarding claims 28-29 and 37-38, the trigger signal generated by the triggering amplifier 52 is applied to at least one switch, which comprises at least one transistor (66 or 68).

Regarding claims 30 and 39, wherein the trigger signal is based on at least an information signal (audio signal) from microphone 34.

7. Claims 25, 34 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fullerton in view of Buchan as applied to claims 23, 33 and 40 above, and further in view of Howell (U.S. Patent No. 4,583,232).

Regarding claims 25, 34 and 41 as applied to claims 23, 33 and 40 above, although Fullerton fails to teach or suggest that the time domain filter 82 is a bandpass filter.

Howell discloses a time domain 24 in Figure 1 which is a time domain bandpass filter and teaches that the time domain bandpass filter 24 passes the square wave to its

output if frequency is within the pass band and has no output otherwise (col. 3, lines 19-23).

Therefore, it would have been obvious to one of ordinary skilled in the art to use a time domain bandpass filter as Fullerton's time domain filter 82 as taught by Howell in order to output only the pass band of the input signal.

### ***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Young T. Tse whose telephone number is 571- 272-3051. The examiner can normally be reached on Monday-Friday 10:00-6:30 PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on 571- 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/YOUNG T. TSE/  
Primary Examiner, Art Unit 2611